

Appl. No. 09/131,141
Amdt. Dated October 22, 2003
Reply to Office Action of July 31, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently Amended) A method for preserving frame order of a plurality of frames
2 transmitted over a plurality of communication links, the method comprising:
3 receiving the plurality of frames transmitted over the plurality of communication links;
4 asserting a plurality of indications each denoting the start of frame transmission on a
5 corresponding communication link;
6 for each indication being asserted, generating a pointer value associated with a
7 corresponding frame being transmitted over the corresponding communication link, the
8 pointer value being based, at least in part, on a relative order in which the respective
9 indication is asserted and differing from a pointer value associated with remaining frames
10 of the plurality of frames, the corresponding pointer value associated with each respective
11 frame being used to determine an order according to complete reception of the frame in
12 which the respective frame is promoted from a receive buffer to a system state without
13 modifying the respective frame.
- 1 2. The method of claim 1, further comprising:
2 reading the received frames out of the buffer based, at least in part, on the pointer
3 value.
- 1 3. The method of claim 2, wherein the frames are read out of the buffer in an increasing
2 pointer value order.
- 1 4. The method of claim 1, wherein the indication is an analog indication.
- 1 5. The method of claim 4, wherein the data network is an Ethernet network and the
2 indication is a receive data valid (RX_DV) signal.
- 1 6. The method of claim 1, wherein the plurality of frames are a plurality of frame sizes.
- 1 7. (Previously Amended) The method of claim 1, comprising storing records in the buffer
2 in an order which does not correspond to the order of frame transmission of the records.

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1 8. (Previously Presented) The method of claim 1, further comprising reading the plurality
2 of frames out of the receive buffer in accordance with their pointer value, in an order different
3 from an order in which the frames are stored in the receive buffer.

1 9. (Currently Amended) An apparatus comprising:
2 a buffer having a plurality of records; and
3 a network interface, coupled to the buffer, to receive a plurality of frames from a plurality
4 of communication links, to store the frames in the corresponding plurality of records
5 within the buffer in order of receipt, and to assign a pointer value to each of the plurality
6 of records denoting a relative order of frame transmission of each of the plurality of
7 frames, the pointer value associated with each record in the buffer being used to
8 determine an order according to complete reception of the frame in which the
9 corresponding frame is promoted from the buffer to a system state.

1 10. The apparatus of claim 9, wherein the network interface receives, for each of the plurality
2 of communication links, an indication denoting the commencement of frame transmission to
3 assign the pointer value.

1 11. The apparatus of claim 9, wherein the plurality of communication links are part of an
2 Ethernet network.

1 12. (Previously Amended) The apparatus of claim 10, wherein the indication is an analog
2 indication.

1 13. The apparatus of claim 12, wherein the indication is an asserted receive data valid signal.

1 14. The apparatus of claim 9, wherein the network interface promotes frames stored in the
2 plurality of records of the buffer to a system state in order of pointer value.

1 15. (Currently Amended) In a data network, a method for preserving frame order of a
2 plurality of frames transmitted across a multi-link trunk, the method comprising:
3 receiving up to a plurality of indications denoting commencement of frame
4 transmission on the multi-link trunk; and
5 assigning a plurality of pointer values to a corresponding plurality of records in a
6 buffer receiving the corresponding plurality of transmitted frames based, at least in part,
7 on a relative order in which the indications are received, the pointer values associated
8 with the plurality of records being used to determine an order according to complete
9 reception of the frame in which the corresponding frames are promoted from the buffer to
10 a system state.

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- 1 16. The method of claim 15, wherein the multi-link trunk is comprised of a plurality of
2 physical links aggregated as a single logical link.
- 1 17. The method of claim 15, wherein the indications are an analog signal denoting receive
2 data valid.
- 1 18. The method of claim 15, further comprising promoting the received frames from the
2 buffer based on pointer value order.
- 1 19. (Currently Amended) A network device to communicate with other network devices
2 through a multi-link trunk, the network device comprising:
3 a buffer having a plurality of records; and
4 a network interface, coupled to the buffer and the multi-link trunk, to receive a
5 plurality of frames from the multi-link trunk, store the frames in the corresponding
6 plurality of records in the buffer, and to assign a pointer value to each of the plurality of
7 records denoting a the relative order of frame transmission commencement of each of the
8 plurality of frames, the pointer value associated with each record being used to determine
9 an order according to complete reception of the frame in which a corresponding frame is
10 promoted from the buffer to a system state without modifying the corresponding frame.
- 1 20. The network device of claim 19, wherein the multi-link trunk is comprised of a plurality
2 of physical links.
- 1 21. The network device of claim 20, wherein the network interface receives, for each of the
2 plurality of physical links comprising the multi-link trunk, an indication denoting the
3 commencement of frame transmission on each physical link, and uses the indication to assign
4 pointer values.
- 1 22. (Previously Amended) The network device of claim 19, wherein the network interface
2 promotes each of the plurality of frames stored in the buffer to a system state in order of pointer
3 value, irrespective of an order in which they are stored in the buffer.